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ABSTRACT

Just as a classroom where teacher and students are physically present develops into a community over the course of a semester, classes taught via the Internet become virtual learning communities, communities unbounded by physical space. This paper describes a course on information design that was implemented entirely via the Internet, including World Wide Web, listserv, and e-mail. The design of a virtual community was used, featuring 13 design components, which are discussed in detail: (1) competence; (2) a shared, understood goal; (3) mutual respect, tolerance, and trust; (4) creation and manipulation of shared spaces; (5) multiple forms of representation; (6) playing with the representations; (7) continuous but not continual communication; (8) formal and informal environments; (9) clear lines of responsibility but no restrictive boundaries; (10) decisions do not have to be made by consensus; (11) physical presence is not necessary; (12) selective use of outsiders for complementary insights and information; and (13) the end of collaboration. (AEF)

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Information Design Via The Internet

by Hilary McLellan

Abstract

This paper describes a course on Information Design implemented entirely via Internet. The design model of a virtual community was used, featuring thirteen design components: (1) Competence, (2) A shared, understood goal, (3) Mutual respect, tolerance, and trust, (4) Creation and manipulation of shared spaces, (5) Multiple forms of representation, (6) Playing with the representations, (7) Continuous but not continual communication, (8) Formal and informal environments, (9) Clear lines of responsibility but no restrictive boundaries, (10) Decisions do not have to be made by concensus, (11) Physical presence is not necessary, (12) Selective use of outsiders for complementary insights and information, and (13) Collaboration's end.

Introduction

This paper will describe an experimental course on Information Design that was implemented entirely via Internet, including World Wide Web, listserv, and email. Internet courses can be implemented in several different ways, to meet the distinctive needs of learners. The Information Design class was designed and implemented as a virtual community, based on a model put forward by Michael Schrage (1991, 1995).

Virtual Learning Communities

Just as a classroom where teacher and students are physically present develops into a community, however temporary, over the course of a semester, classes taught via the Internet become virtual learning communities, communities unbounded by physical space. According to Howard Rheingold (1993), "Virtual communities are social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace." (p. 9) Rheingold further explains that, "People in virtual communities use words on screens to exchange pleasantries and argue, engage in intellectual discourse, conduct commerce, exchange knowledge, share emotional support, make plans, brainstorm, gossip, feud, fall in love, find friends and lose them, play games, flirt, create a little high art and a lot of idle talk. People in virtual communities do just about everything people do in real life, but we leave our bodies behind." (p. 3) People in virtual communities engage in learning, along with all these other activities.

Schrage's Model

How to create a virtual community that supports learning? Michael Schrage (1991) offers a model that highlights the importance of collaboration. According to Schrage, the goal should be to create a *shared experience* rather than *an experience that is shared*. An experience that is shared is passive. A shared experience is one that is participatory — a conversation or a discussion, as opposed to a speech, a lecture or a television broadcast. Schrage theorizes that electronic environ-ments such as the Internet and groupware offer immense potential as a context for supporting collaboration.

Collaboration is central to this model. "Collaboration is the process of shared creation: two or more individuals with complementary skills interacting to create a shared understanding that none had previously possessed or could have come to on their own. Collaboration creates a shared meaning about a process, a product, or an event. In this sense, there is nothing

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routine about it. Something is there that wasn't there before. Collaboration can occur by mail, over the phone lines, and in person. But the true medium of collaboration is other people." (Schrage, p. 40) Schrage emphasizes that in a collaborative relationship, the creation of value is the central issue; communication and team-work exist to support this.

Schrage presents a model of collaboration composed of thirteen design themes: (1) Competence, (2) A shared, understood goal, (3) Mutual respect, tolerance, and trust, (4) Creation and manipulation of shared spaces, (5) Multiple forms of representation, (6) Playing with the representations, (7) Continuous but not continual communication, (8) Formal and informal environments, (9) Clear lines of responsibility but no restrictive boundaries, (10) Decisions do not have to be made by concensus, (11) Physical presence is not necessary, (12) Selective use of outsiders for complementary insights and information, and (13) Collaboration's end.

Implementing Schrage's Model

The Information Design course taught via the Internet (including World Wide Web, listserv, and electronic mail) was designed on the basis of Schrage's model of collaborative communities. This course served 25 masters degree students across the western United States and Canada. The students enrolled in this class were dispersed, but many were clustered in nodes so that in some instances they could work together with classmates. For example, a number of students lived in or near Portland, Oregon. Sometimes they got together at someone's home or office to explore advanced Internet resources that could not be accessed on all the students' computers.

This kind of Internet-based course serves the needs of students seeking to extend their training without having to add too much of an extra burden to lives already filled with work and family obligations. Students can participate in an Internet-based class from home. They can log on to the class resources and activities on the Internet at their convenience. The students in the Information Design class were very enthusiastic about the convenient opportunity that this course offered them.

How did this class conform to Schrage's model? The following discussion will explain.

Competence

The course was based on competence with the technology underlying the course delivery — computers, modems, communications software. There was a wide range of Internet and even basic computer experience among the students enrolled in the class. Students who possessed more experience, shared their expertise, raising the level of competence for all. And when a technical problem, such as transferring homework file to the listserv stumped everyone, students collaborated in experimentation until a solution was reached. Furthermore, *developing competence* in terms of both technical skills and mastery of the content, were central to the purpose of the class. In this experimental class, a communal mind developed, with people's competences proving highly complementary and synergistic.

A Shared, Understood Goal

The class and its subject matter provided the goal, which was shared by all the students: to learn about information design through a new, experimental learning process that highlighted technology skills. This goal encompassed all of the themes that Schrage identified: problem-solving, creating, discovering, creating value — and developing competence, mastery.

Mutual Respect, Tolerance, And Trust

As any educator knows, this element of Schrage's model should be fundamental to all educational contexts and experiences. In practice, the teacher can set the tone, but

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occasionally problems can arise, often due to a single individual — someone who is not listening to others or who seems to need to know all the answers, to have the last word, creating his or her own debilitating barriers to learning while turning off and even intimidating other students. The Internet context can draw out these tendencies in a few students, more so than a face-to-face learning environment. Concommitently, interpersonal cues that might restrain this kind of behavior in a face-to-face setting are missing in the context of a virtual classroom. In these instances, the teacher must continually reinforce the collaborative premise of the virtual learning community.

In some ways, the Internet context creates a level playing field for diverse students, thereby diminishing sources of intolerance and mistrust. One student in the Information Design class commented that in the Internet format, topics were "distilled down to their intellectual component, with all extraneous variables removed." These extraneous variables include race, gender, different abilities, and appearances. The Internet format is not a panacea, and it is not equally appealing to all types of learners, but it can filter out such "noise" factors that interfere with communication and learning — once technical problems are overcome!

Creation And Manipulation Of Shared Spaces

In the Information Design class, the listserv provided a shared space that all could share in creating. Beyond that, students could identify the URLs for World Wide Web sites relevant to class topics and assignments, thereby providing pointers to the larger shared space of the World Wide Web itself. Some students added such URLs to their own Web pages as a resource for all the students in the class.

Multiple Forms Of Representation

Multiple forms of representation were central to the content of this course on Information Design. Illustrations, charts, photographs and graphic elements were featured along with text on the Web page "Cyberlectures," providing multiple forms of representation. This is something that can be applied to any kind of subject matter. As the capabilities of the World Wide Web advance, audio and multimedia will become widespread. However, in designing and implementing Internet-based courses it is essential to keep in mind that students accessing computers from home are less likely to have access to the full panoply of Internet capabilities than those accessible to students on campus with access to university resources.

Playing With The Representations

Learning activities that feature playing with different representations can be very valuable (McLellan, 1996a). Since the Internet provides information in different forms, it is ideal for this kind of activity. In addition, the Information Design class featured a Web page design assignment that specifically centered upon playing with representations: a map transformation assignment. Students were assigned to create a World Wide Web page featuring a map for a trip of their choosing, such as the morning ride to work, and translate it into three different forms of information: a visual map, formal directions using text, and an informal written description of the trip, based on their subjective perceptions and thoughts.

Continuous But Not Continual Communication

Communication must be timely. This includes timely responses to student questions and timely input to listserv discussions by students and instructor. Timeliness will vary in the context of the particular virtual class, but continuous monitoring of the listserv by the instructor is vitally important.

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In this Internet-based class, students could log on to the listserv and the class Web pages whenever it suited their schedules. However, it was very important for students to participate in the listserv dialogue on a regular basis. Many students logged on daily. But a few students had problems staying in touch with the virtual community on a regular basis. Thus, constraints enforcing continuous communication are needed. Setting deadlines is an important strategy to motivate students to maintain continuous communication and engagement with class activities. At the same time, some flexibility must be maintained to accomodate technical problems, including student efforts initially to join and log onto the class listserv and Web pages as well as computer server crashes that may occur (due to growing pains, excessive demands, power failures, etc.) while the class is in progress, preventing access to class Web pages and other resources.

The telephone should not be overlooked in communications between students and the instructor. It provides a more open-ended forum for discussion and trouble-shooting than email. It's a great way to help students while eliciting valuable feedback. In addition, the telephone offers greater potential for the instructor to convey both personality and empathy than email.

Formal And Informal Environments

In this class, the listserv provided the primary informal space. Students submitted their assignments to the listserv, together with introductions, discussions, jokes, and anec-dotes. This class featured more assignments than a traditional class, specifically, short assignments that were smaller in scale and relatively informal, in keeping with the listserv format. Assignments were designed to support the possibility of wide-ranging discussions, which, indeed, resulted.

The World Wide Web component of the class acted as the formal environment. It featured the syllabus, weekly "cyberlectures," assignments, references, and related resources.

In contrast to much traditional teaching, the virtual community context centered around the listserv provided greater interaction between students as well as the opportunity for students to see each other's homework and respond to it. creating a more dynamic learning experience. This had valuable pedagogical implications. One student com-mented, "You all have such diverse approaches. It has been fun to follow your links and glimpse a bit of your personalities... this has been a good group to work with and learn from." Still another student had this to say: "Many thanks to all of you for being so interesting. I'm favorably impressed by your intellect, your creativity, and your hard work ..."

Clear Lines Of Responsibility But No Restrictive Boundaries

Clear lines of responsibility were established through the framework of the syllabus and the implementation of the class. Many of the class assignments centered around exploring resources on the World Wide Web; as a result, the boundaries of exploration were broad and unrestricted. And class discussions were unrestricted, except in rare instances when a student became domi-neering.

Decisions Do Not Have To Be Made By Concensus

In an educational context such as the class described here, the instructor is the final arbitor in decision-making. However, it is valuable to have students take ownership of the class by helping to determine certain things such as discussion topics, helping classmates deter-mine how to solve technical problems, ideas for carrying out assignments, etc.

Physical Presence Is Not Necessary

The lack of physical presence did not prove a barrier in this class. However, a Web page was established for this class that

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featured brief student biographies, together with photographs and email address. This helped students to attach faces to the other participants in the virtual community of the class. In addition, students were asked to introduce themselves informally on the listserv at the beginning of the class. A photograph of the instructor was included on the class home page so that students would have a face to connect to this member of the virtual community.

Rheingold reports that, "Some people — many people — don't do well in spontaneous spoken interaction, but turn out to have valuable contributions to make in a conversation in which they have time to think about what to say. These people, who might constitute a significant proportion of the population, can find written communication more authentic than the face-to-face kind. (p. 23)" Indeed, this proved to be true in this class. One student in particular who was reportedly very shy in face-to-face classes became quite loquacious in the virtual community context of the Internet-based class.

Another student reported afterward that he got to know students far better in this class than in person-to-person meetings that took place in on-site classes and other forums. This corresponds to Rheingold's assessment that the Internet is a place where "people often end up revealing themselves far more intimately than they would be inclined to do without the intermediation of screens and pseudonyms. (p. 27)"

Significantly, one thing that greatly appealed to students in this class was the opportunity to get to know — and share an instructional experience with —- students from other regional sites besides there own. One student commented, "This has been a lot of fun, and I've enjoyed this opportunity to take a class with all you midwesterners and get to know some of the other students outside of Oregon." Most of the other classes taught via the distance program that included this Information Design class are taught at regional centers (Portland, OR; Lincoln, NE; Kansas City, MO; Denver, CO; Albuquerque, NM; Sioux City, IA; and Grand Forks, ND), serving students in a single region or state. With the Internet format, students from Emporia, KS and students in the various regional programs all have the opportunity to share the same instructional experiences.

Selective use of outsiders for complementary insights and information

Outsiders were not utilized directly in this class, but outside information came from the textbooks and the wealth of resources available on the Internet. It would be very easy to get input from outsiders in an Internet-based class in the form of guest speakers contributing to the listserv dialogue or student interviews with outside experts via email, telephone, etc. Some assignments for this class featured field trips, which fit within this dimension of Schrage's model.

Collaboration's End

The class ended with the end of the semester. The temporary virtual community dissolved. However, lasting bonds were established. One student who traveled to a city in another state to attend a weekend intensive class reported that students at that location who had been her virtual classmates in the Information Design class were very hospitable, inviting her to stay at their homes and to go out to dinner with them.

It is important to note that while the class no longer exists as a virtual community — collaboration's end — the students still form a community within the graduate program and as a community of professionals. Near the end of the class, one student wrote, "I am assuming that many of us will be raving Web Heads by the end of the class and will be doing all sorts of work in our communities (or for ourselves). It would be nice for us to be able to continue our discussions on the ESU [Emporia State University] listserv that's dedicated to Web

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talk." As this comment indicates, there are forums for the virtual community of the members of the Information Design class to continue, as part of a larger virtual community. And they seem to have the motivation to do so.

Conclusion

This paper has presented a case study of an Internet-based class that was based around a model of a collaborative virtual community. This class was a test pattern for future courses taught via the Internet. Already revisions have been made in response to what was learned in this class, including more emphasis on deadlines, establishing a comprehensive plan for class implementation at the outset (easier done the second time around!), and increased emphasis on some telephone communication between individual students and the instructor. In Internet-based education, many approaches are possible; it is indeed a powerful and flexible medium for teaching and learning. For an overview of these different approaches, refer to "Internet-based Education: Some Guidelines" (McLellan, 1996b) at the Web site http://tech-head.com/i-ed.htm. As this case study demonstrates, the model of a virtual community, with students interacting dynamically with the content, the technology, and, most importantly, each other, offers a powerful and convivial approach to providing education at a distance.

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